





## QUICK REFERENCE CARD

Selecting the RUN  icon will allow you to perform general computations and arithmetic.

The function keys allow you to access the tab (soft key) menus that will come up at the bottom of the screen. When an  appears above the **F6** key, selecting **F6** will offer more on-screen choices.

The **MENU** key displays every mode the calculator has. To select a mode, you may   to the desired icon and press **EXE** or press the number or letter in the lower right hand corner of the icon.

The **EXIT** key operates like the back arrow on a web browser; it will take you back one screen each time you select it. The **EXIT** key will not take you to the icon menu.

The **F $\leftrightarrow$ D** key is a toggle key that will change answers or entered numbers back and fourth from decimal to fraction form.

The **AC/ON** key will power the unit on. To turn the unit off, press the yellow **SHIFT** key, then **AC/ON** key.

The **EXE** key executes operations. When data is entered, the **EXE** button must be pressed to store the data.

The **a $\frac{\Box}{\Box}$**  key is used to obtain a fraction bar. To obtain a mixed number, press **a $\frac{\Box}{\Box}$**  after inputting the whole number.










The following explains the meaning of each icon on the fx-9750GII main icon menu.

ICON	Menu Name	Description
	RUN	This icon menu is used for general computations, including binary, octal, decimal, and hexadecimal functions and matrices.
	STATISTICS	This icon menu is used to perform single-variable (standard deviation) and paired variable (regression) statistical calculations, to perform tests, to analyze data and to draw statistical graphs.
	GRAPH	The icon menu is used to draw, store and calculate information of functions.
	DYNAMIC GRAPH	This icon menu is used to draw multiple versions of a graph by changing the values in a function.
	TABLE	This icon menu is used to store functions, to generate a numeric table of different solutions as the values assigned to variables in a function change, and to draw graphs.
	RECURSION	This icon menu is used to store recursion formulas, to generate a numeric table of different solutions as the values assigned to the variables in a function change, and to draw graphs.
	CONICS	This icon menu is used to graph parabolas, circles, ellipses, and hyperbolas. You can input a rectangular or polar coordinate function or a parametric function for graphing.
	EQUATION	This icon menu is used to solve linear equations with two through six unknowns, and high-order equations from 2 <sup>nd</sup> to 6 <sup>th</sup> degree.
	PROGRAM	This icon menu is used to store programs in the program area and to run programs.
	TIME VALUE OF MONEY	This icon menu is used to perform financial calculations and to draw cash flow and other types of graphs.
	Data Analyzer Link	This icon menu is use to control the optionally available EA-200 Data Analyzer. For information about this icon menu, download the E-CON2 manual from <a href="http://edu.casio.com">http://edu.casio.com</a> .
	LINK	This icon menu is used to transfer memory contents or back-up data to another unit or PC.
	MEMORY	This icon menu is used to manage data stored in memory.
	SYSTEM	This icon menu is used to initialize memory, adjust contrast, reset memory, and to manage other system settings.

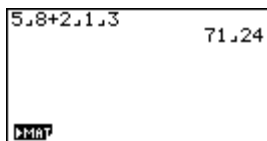




# RUN

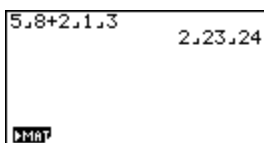
This section is an overview of the RUN-MAT Icon. To select an icon from the icon menu system, use the     to highlight the desired icon, then press  or press the number/letter in the lower right corner of the icon. For the Run menu, press  to display the initial Run screen.



- When performing general computations, select  to enter fractions and mixed numbers. To solve the problem  $\frac{5}{8} + 2\frac{1}{3}$  input the following:

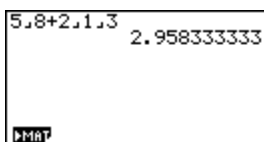
-          








- To change the answer  $\frac{71}{24}$  to a mixed number, press   ( $a\frac{b}{c} \leftrightarrow \frac{d}{c}$ ).

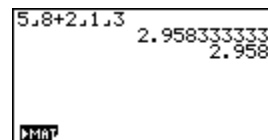
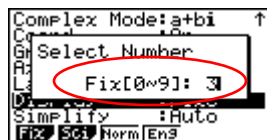
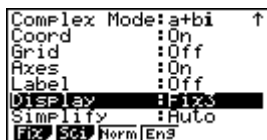


- To change the answer to decimal form, press .  is a toggle key that will switch entered data or answers from fraction to decimal form or decimal to fraction form.



- To change the number of decimal places displayed, enter the set up menu by pressing  .  to Display, select  (Fix) and enter the desired amount of decimal places followed by . For this example, 3 decimal places are used.

-                 



From the Run menu many calculations can be entered by selecting **OPTN**. For example: hyperbolic, probability/distribution, numeric (including differential and integration), conversion, engineering, complex number and binary, octal, decimal and hexadecimal calculations.

5. To calculate the possible number of different arrangements using 4 items selected from among 10 items, enter the following from the Run home screen:

• **OPTN** **F6** **F3** **1** **0** **F2** **4** **EXE**



Note: The fixed decimal setting was changed back to Norm1.

6. To calculate  $|-10^3 + 2|$ , enter the following from the Run home screen:

• **OPTN** **F3** **F2** **(** **(-)** **1** **0** **^** **3** **+** **2** **)** **EXE**



Note: Calculations can be performed with complex numbers and answers can be displayed in a+bi form.

7. To calculate  $|3 + 4i|$ ; enter the following from the Run home screen:

• **OPTN** **F3** **F2** **(** **3** **+** **4** **F1** **)** **EXE**



8. To calculate  $(-3 + 2i) + 15i$ ; enter the following:

• **OPTN** **F3** **(** **(-)** **3** **+** **2** **F1** **)** **+** **1** **5** **F1** **EXE**



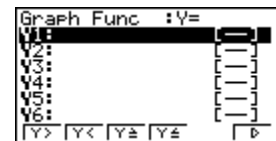
# GRAPH

Various icon (Run, Table, Dynamic, Recursion & Conics) will allow you to graph or analyze the graphs of given information. This section is an overview of the GRAPH Icon and will highlight some basic features of this mode.

The initial screen allows immediate input of function set equal to zero. You may begin inputting data into Y1: and press **[EXE]** to store. To draw your function, select **[F6]**.

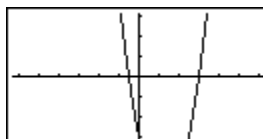
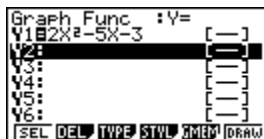


You can change the type of graph (r = polar coordinate, parametric functions, x =, and x- and y-inequalities) by select the corresponding function button and then press the **[▶]** to begin inputting information.

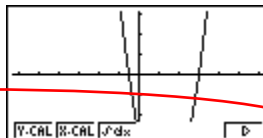
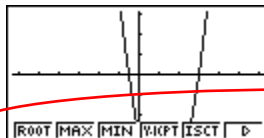


- To draw the graph of the function  $y = 2x^2 - 5x - 3$  from the Icon Menu system, input the following:

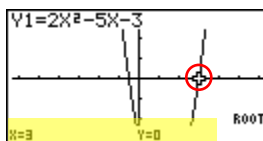
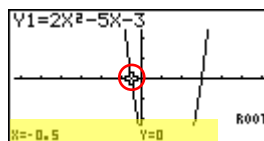
- [3]** **[2]** **[X,θ,T]** **[x<sup>2</sup>]** **[−]** **[5]** **[X,θ,T]** **[−]** **[3]** **[EXE]**



To analyze features of this graph (roots, maximum and minimums, y-intercepts, intersections, determine coordinates, and integrals) select **[F5]** (**G-Solve**).

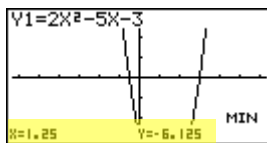


- [F1]** (Root):



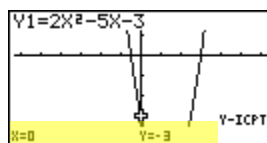
Note: The left-most root will always display first. Select **[▶]** to display the next root.

3. **F3** (Minimum):

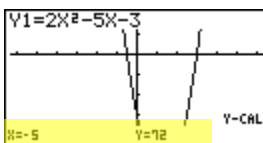
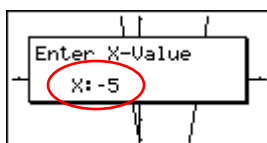


Note: As long as the x-value of your vertex is in the viewable domain; you do not need to see the vertex to calculate the minimum value. However, you can change the viewing window by selecting **F3** in the graph window. You can also change the window manually by using the  $\leftarrow$   $\rightarrow$   $\uparrow$   $\downarrow$  keys.

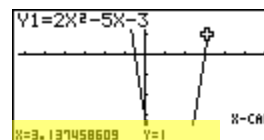
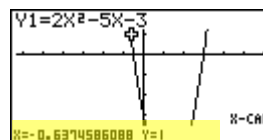
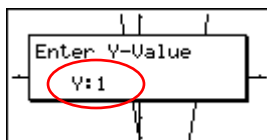
4. **F4** (y-intercept):



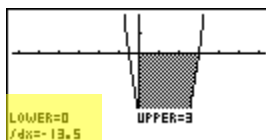
5. **F1** (y-calculation): What is the value of y when x is -5?



6. **F2** (x-calculation): What is the value (s) of x when y is 1?



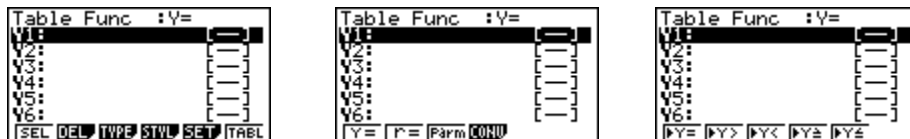
7. **F3** (integral): Determine the integral value at (0,3) for the function  $Y1 = 2x^2 - 5x - 3$ .



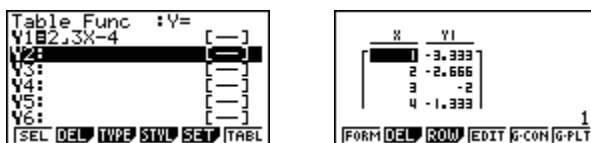
# TABLE

The section is an overview of the TABLE Icon. To select this icon, you may highlight it and press **EXE** or press **5**.

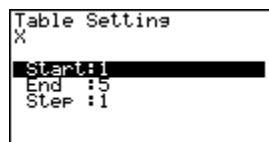
The initial screen allows immediate input of functions that are set equal to 0. To change the type of expression to be entered, select **F2** for polar coordinates, **F3** for parametric functions or **F4** to change a previously entered function to an inequality.



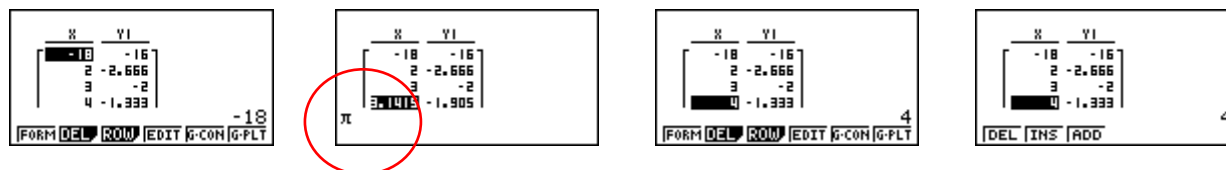
- To see a table for the function  $y = \frac{2}{3}x - 4$ , highlight **Y1:** and input the following
  - 2**  **$\frac{\square}{\square}$**  **3** **X,θ,T** **-** **4** **EXE** **F6**



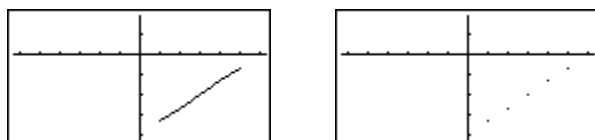
- The default setting for tables is: X starts at 1, ends at 5, and increases by increments of 1. You change this by pressing **EXIT** or **F1** (FORM) to return to the initial screen and then select **F5** (SET).



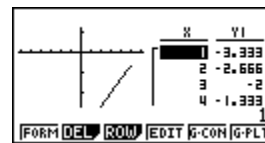
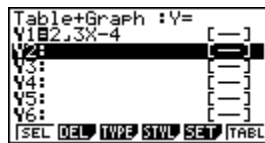
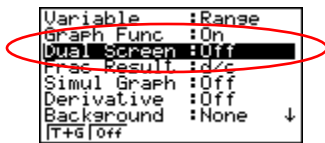
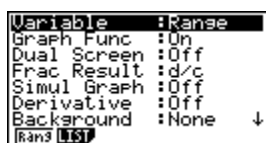
- However, you can manually enter a number anywhere in the x-column of the table and press **EXE** to see the corresponding y-value (including fractions, decimals, even  $\pi$ ). You can insert and delete rows in this view by pressing **F3** (ROW).



- From the table view screen, you can press **F5** (G-CON) to see a linear graph or **F6** (G-PLT) to see a plot graph for the function you entered.



5. To see a split screen of your table and graph, press **SHIFT** **MENU** to enter the setup menu for the table icon and **▼** to Dual Screen, select **F1** (T + G), **EXIT**, and then **F6**.





# STATISTICS

This section is an overview of the STAT icon; it will highlight just a few of the features for single-variable data and paired-variable data. To select this icon, you may highlight it and press **EXE** or press **2**.

The initial List Editor Screen that allows input of statistical data and performs numerous statistical calculations. To input a list of single-variable data, highlight the first cell under List 1 and enter each number followed by **EXE**.

	List 1	List 2	List 3	List 4
SUB				
1				
2				
3				
4				

GRPH CALC TEST EDIT DIST D

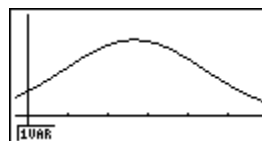
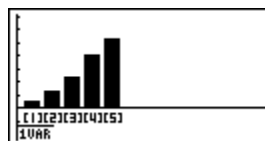
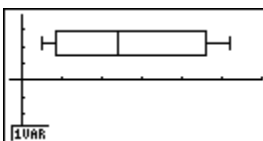
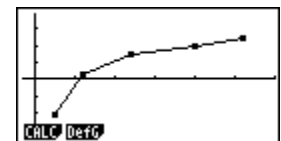
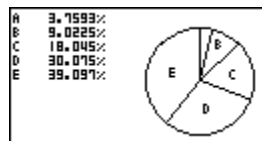
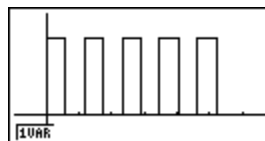
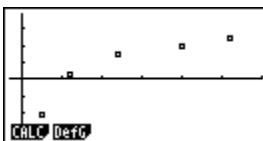
1. For this example, input this set of data:

- 1, 0.5, 1.2, 4, -1, 1, 3, 5, 6, 3.4

	List 1	List 2	List 3	List 4
SUB				
8	5			
9	6			
10	3.4			
11				

GRPH CALC TEST EDIT DIST D

2. From this screen you display various graphs depending on whether you single or paired-variable data (scatter-plot, line, normal probability, histogram, median box, mean box, normal distribution, broken line, and regression: linear, quadratic, cubic, quartic, logarithmic, exponential, power, sinusoidal and logistic).



3. The initial default graph is a scatter-plot. To change the type of graph you would like to use, press **F1** (GRPH), then **F6** (SET), **▼** to Graph Type:, for this set of data, we will make a histogram, press **F6**, and then **F1** for histogram.

	List 1	List 2	List 3	List 4
SUB				
8	5			
9	6			
10	3.4			
11				

GRPH CALC TEST EDIT DIST D

	List 1	List 2	List 3	List 4
SUB				
8	5			
9	6			
10	3.4			
11				

GRPH1 GRPH2 GRPH3 SET SET

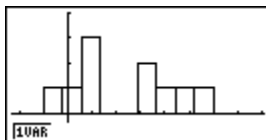
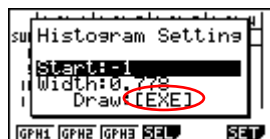
StatGraph1	
Graph Type	:Scatter
XList	:List1
YList	:List2
Frequency	:1
Mark Type	:•

Scat XY NPP Pie D

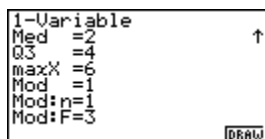
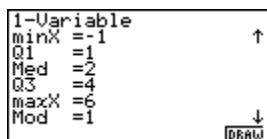
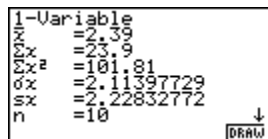
StatGraph1	
Graph Type	:Scatter
XList	:List1
YList	:List2
Frequency	:1
Mark Type	:•

Hist Box Bar N-Dis Brkn D

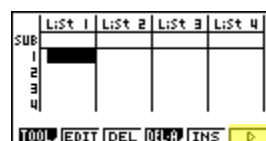
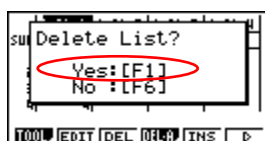
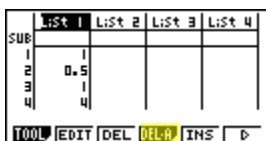
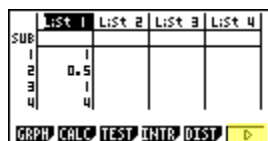
4. Press **[EXIT]** to take you back to your list of data and select **[F1]** (GPH1) and then **[EXE]** to see your graph.



5. The following screen shots show what one-variable calculations can be obtained by pressing **[F1]**.



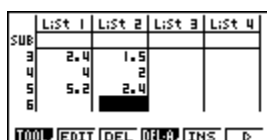
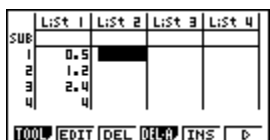
6. To delete this set of data, press **[EXIT]** until you return to the initial List Editor screen. Select **[F6]** for more options, arrow up until List 1 is highlighted, select **[F4]** (Del-A), then **[F1]**.



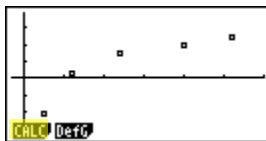
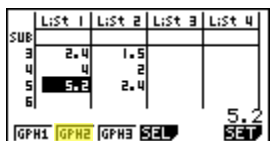
7. For paired variable data, use the following:

List 1: 0.5, 1.2, 2.4, 4.0, 5.2  
List 2: -2.1, 0.3, 1.5, 2.0, 2.4

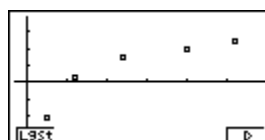
Enter List 1 first, and then **[▶]** to begin entering List 2.



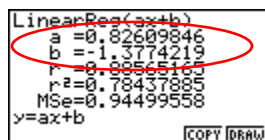
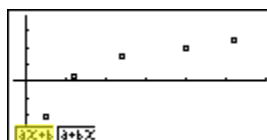
8. To see a scatter-plot of these data, you can go through and change back GPH 1 using the process above, or select **[F2]** (GPH 2) from the List Editor screen whose default is also a scatter-plot.



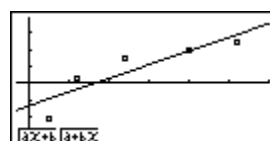
9. From the scatter-plot screen, pressing **F1** will show all the calculation that can be obtained from this set of data.



10. To calculate linear regression, select **F2** from the first set of options and then press **F1** for  $y = ax + b$  form.



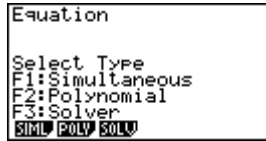
11. From this screen, you select **F5** (COPY) to copy and then paste the equation into the initial graph screen or select **F6** (DRAW) to show the linear regression.



# EQUATION

This section is an overview of the EQUATION Icon. To select this icon, highlight it and press **EXE** or press **8**.

The initial Equation Editor screen has three modes to choose from, Simultaneous, Polynomial, and Solver; this section will give an overview of each mode.



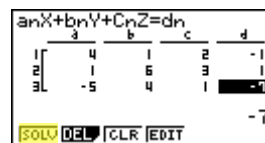
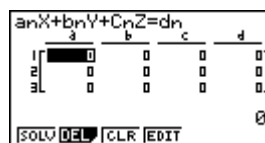
The Simultaneous mode allows you to solve simultaneous linear equations with two to six unknowns.

1. Solve the following system of equations:

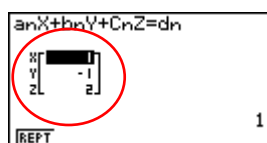
$$\begin{cases} 4x + y - 2z = -1 \\ x + 6y + 3z = 1 \\ -5x + 4y + z = -7 \end{cases}$$

Press **F1** to select the Simultaneous mode and press **F2** for three unknowns. The calculator will display a matrix where the coefficients and constants can be entered in to as long as each equation is in standard form. To enter this system of equations (already in standard form) input the following:

- **4** **EXE** **1** **EXE** **(-)** **2** **EXE** **(-)** **1** **EXE**
- **1** **EXE** **6** **EXE** **3** **EXE** **1** **EXE**
- **(-)** **5** **EXE** **4** **EXE** **1** **EXE** **(-)** **7** **EXE**



There are four options at the bottom of the screen, press **F1** (SOLV). The solution to this system is (1, -1, 2).

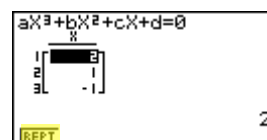
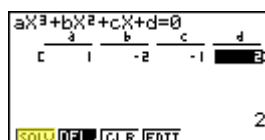
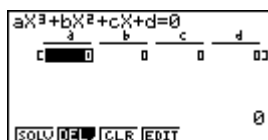
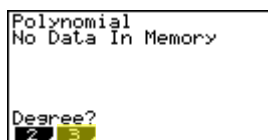


Press **EXIT** to return to the previous screen, press **F1** (REPT) to edit this problem or continue solving simultaneous equations with three unknowns. To edit just one of the numbers in the system, arrow to the number to be edited and press **F4** (EDIT) or highlight the number to be edited and input the new number, then press **EXE**.

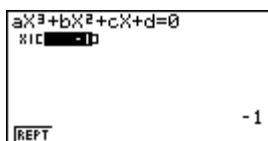
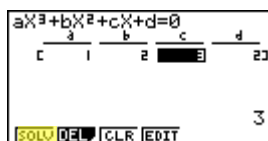
Press **EXIT** until the Equation Editor screen is displayed. The second mode is Polynomial **F2** and can be used to solve high-order equations (in standard form) from the 2<sup>nd</sup> to the 6<sup>th</sup> degree.

2. To solve the equation  $x^3 - 2x^2 - x + 2 = 0$ , input the following:

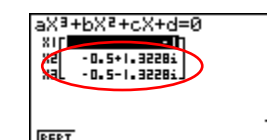
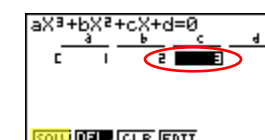
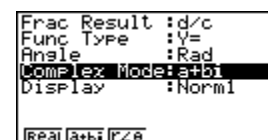
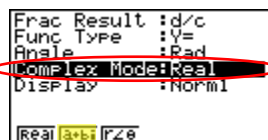
- F2** **F2** **1** **EXE** **(←)** **2** **EXE** **(←)** **1** **EXE** **2** **EXE** **F1**



3. To change the equation to  $x^3 + 2x^2 + 3x + 2 = 0$ , select **F1** (REPT) and change the b-value to 2, the c-value to 3 and press **F1** (SOLV).



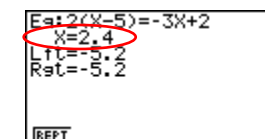
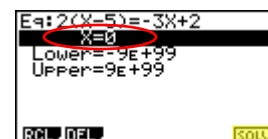
4. The default setting is for real numbers, to change the display to a+bi form, press **SHIFT** **MENU** for the Polynomial Set-Up menu, select **F2** (a+bi), **EXIT**, and then **F1** (SOLV).



The third function, Solver **F3**, allows you to determine the value of any variable in a formula or equation. You can input any formula exactly as it appears using **ALPHA** for any variables. We will take a look at solving a linear equation and a formula.

5. To find the value of x in the following equation,  $2(x - 5) = -3x + 2$ , input the following starting from the Equation Editor Screen:

- F3** **2** **( (** **X,0,T** **-** **5** **)** **SHIFT** **•** **(←)** **3** **X,0,T** **+** **2** **EXE** **F6**



In the last screen, “Lft” and “Rgt” represent the values of the left and right sides that have calculated using the solution; this is the calculator’s way of checking the solution.

You can also enter a formula, assign values and solve for specific variable using the Solver function of the Equation Editor.

6. Find the radius (to the nearest hundredth) of sphere, whose volume is  $3705.97 \text{ cm}^3$ .

To enter the formula  $V = \frac{4}{3} \pi r^3$  input the following in to the calculator:

• **[F1]** **[▲]** **[ALPHA]** **[2]** **[SHIFT]** **[□]** **[4]** **[ $\pi$ ]** **[3]** **[SHIFT]** **[EXP]** **[ALPHA]** **[6]** **[^]** **[3]** **[EXE]**

```
Eq:U=4.3πR^3
U=0
R=0
Lower=-9E+99
Upper=9E+99
RCL DEL SOLV
```

```
Eq:U=4.3πR^3
U=3705.97
R=0
Lower=-9E+99
Upper=9E+99
RCL DEL SOLV
```

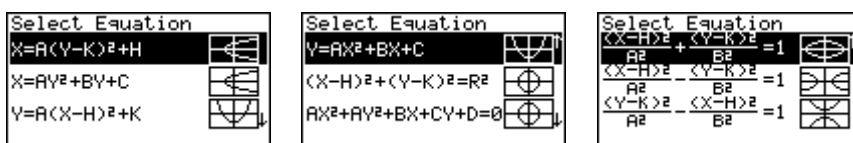
```
Eq:U=4.3πR^3
R=9.599996986
Lft=3705.97
Rgt=3705.97
REPT
```

Note: Selecting **[F1]** will take you back to the previous screen where you can edit and re-solve the previous equation or begin a new problem.

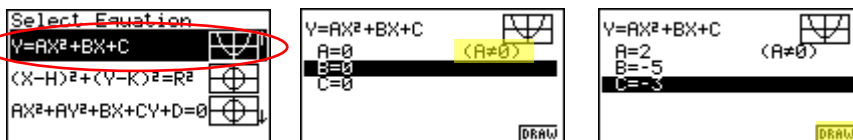
# CONICS

This section is an overview of the CONICS Icon. To select this icon, you may highlight it and press **EXE** or simply press **7**.

The initial screen allows you to choose from various conic functions, including rectangular, polar or parametric form. You may use the **▲** **▼** to select the equation of the function in accordance with the type of graph you want to draw. Once you have chosen the conic function that you would like to graph, you will need to enter the coefficients of the function and then press DRAW **F6**.



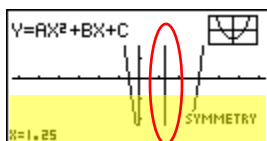
1. To view the graph of the conic:  $y = 2x^2 - 5x - 3$ , select the  $Y = AX^2 + BX + C$  form from the Conics formula menu.



In the Conics modes, when you press **F5** (**G-Solv**), although you are still graphing a parabola like in the graphing section, notice how the vocabulary and options have changed.



2. For example, you can now examine the line of symmetry for this parabola and the equation of that line will be displayed.



You can continue to analyze different areas of this graph and the line of symmetry will still be displayed.